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## SIMD-node Transformations for Non-Blocking Data Structures

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Non-blocking data structures are commonly used by many multi-threaded applications, and their implementation is based on the use of atomic operations. New computing architectures have incorporated data-parallel processing through SIMD instructions, including in some cases support for atomic SIMD instructions. In this paper, we proposed a new framework called SIMD-node Transformations to implement non-blocking data structures that exploit parallelism through multi-threaded and SIMD processing. We show how one- and multi-dimensional data structures can embrace SIMD processing by creating new data structures or transforming existing ones. To illustrate the usefulness of this framework and the performance gains obtained when applying these transformations, a SIMD-transformed lock-free skiplist is presented.

**Keywords:** non-blocking, data structures, SIMD.